

What is claimed is:

1           1. A device for creating an opening in a target material, having a first hardness,  
2           comprising:  
3           a cutting plate, having a second hardness being greater than the first hardness, with  
4           orthogonal grooves on a front side;  
5           a sheet of material, having a third harness being less than the second hardness and having  
6           a surface area less than a surface area of the cutting plate, placed upon the cutting plate;  
7           an explosive charge placed upon the sheet of material, positioned substantially along the  
8           orthogonal grooves on the first side;  
9           initiating means, located proximately central to the explosive charge, to initiate the  
10          explosive charge, creating an explosive force that creates a plurality of petals cantilevered from  
11          the cutting plate that drive into the target material, creating a plurality of petals cantilevered from  
12          the target material to define a fragment-free opening in the target material.

1           2. The device of claim 1, wherein the cutting plate comprises a substantially square  
2           shape.

1           3. The device of claim 2, wherein the cutting plate comprises a steel based material.

1           4. The device of claim 3, wherein the target material comprises an aluminum or steel  
2           based material.

1           5. The device of claim 4, wherein the sheet of material comprises a polymer material.

1           6. The device of claim 1, wherein the orthogonal grooves cut through the cutting plate to  
2           divide the cutting plate into four separate sections and further comprise:

3           attaching means to attach the four separate sections together along the cut to reform the  
4           cutting plate.

1           7. The device of claim 6, wherein the attaching means comprises tape.

1           8. A method of creating an opening in an aluminum or steel based material, comprising  
2 the steps of:

3           placing a sheet of steel based material on the aluminum or steel based material, the sheet  
4 having substantially orthogonal grooves on a side away from the aluminum or steel based  
5 material;

6           placing a second sheet, comprising a polymer material and having a surface area less than  
7 a surface area of the sheet of steel based material, on the grooves;

8           placing an explosive charge on the second sheet, positioned in substantial alignment with  
9 the grooves; and

10          initiating the explosive charge to create a fragment-free opening in the aluminum or steel  
11 based material formed by edges of the sheet of steel based material punching through the  
12 aluminum or steel creating a plurality of petals cantilevered from the aluminum or steel based  
13 material.